

Warm Up Grade 8

February 11, 2016

1) Use the box method or fraction circles to model $4 \div \frac{5}{6} = 4\frac{4}{5}$

2) Reduce and multiply

$$\frac{15 \div 3}{24 \div 4} \times \frac{16 \div 4}{27 \div 3}$$

or

$$\frac{5 \times 4 \div 2}{6 \div 2 \times 9} = \frac{5 \times 2}{3 \times 9} = \frac{10}{27}$$

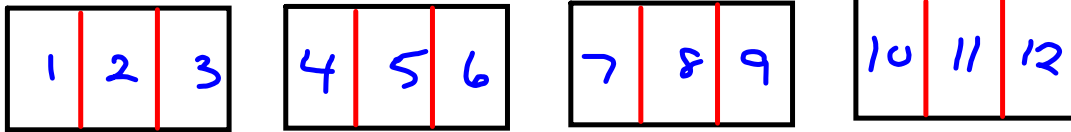
$$\frac{15 \times 16 \div 8}{24 \times 27}$$

$$\frac{15 \div 3 \times 2}{3 \times 27 \div 3}$$

$$\frac{5 \times 2}{3 \times 9}$$

pg 132 Homework pg. 132 # 3-10
 3a) $4 \div \frac{1}{3} = 12$

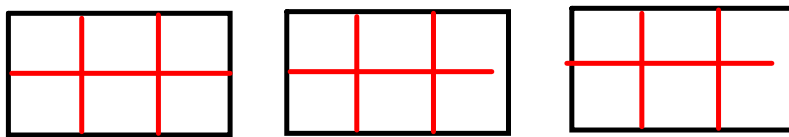
How many $\frac{1}{3}$'s are in 4



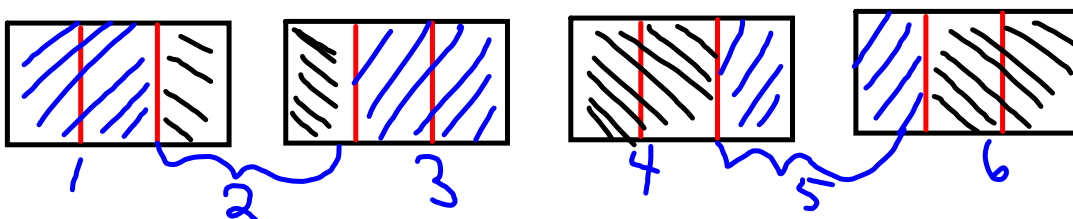
There are 3 $\rightarrow \frac{1}{3}$'s in one whole

In 4 wholes $\rightarrow 4 \times 3 = 12$

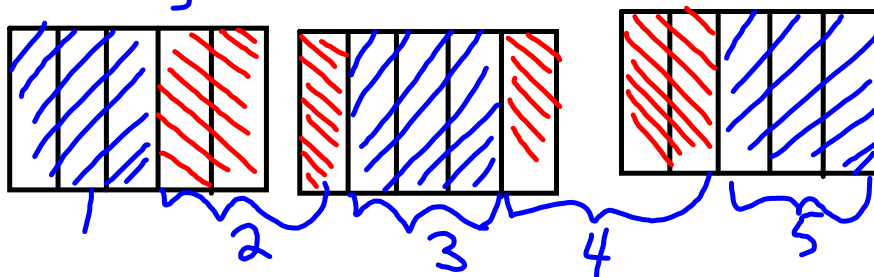
b) $3 \div \frac{1}{6} = 18$



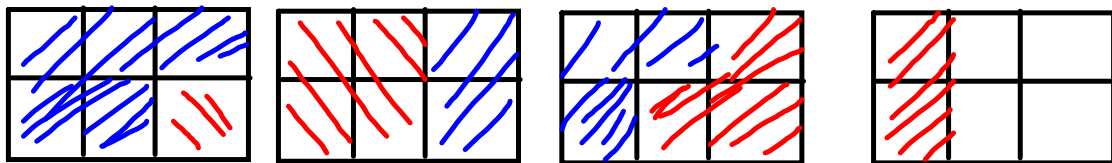
c) $4 \div \frac{2}{3} = 6$



d) $3 \div \frac{3}{5} = 5$



4 $4 \div \frac{5}{6}$

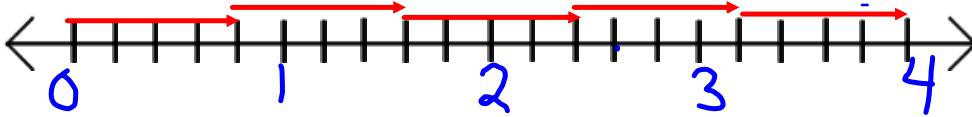


$4 \frac{4}{5}$
or $2 \frac{4}{5}$

4 pieces left but I need 5 $\frac{4}{5}$



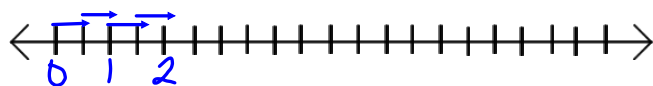
5. $4 \div \frac{4}{5} = 5$ arrows



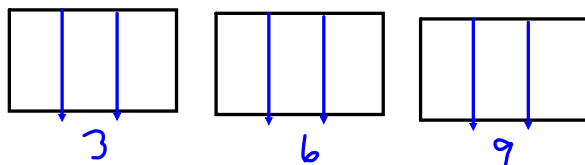
She can study 5 subjects.

6.

$$b) 2 \div \frac{1}{2} = 4$$

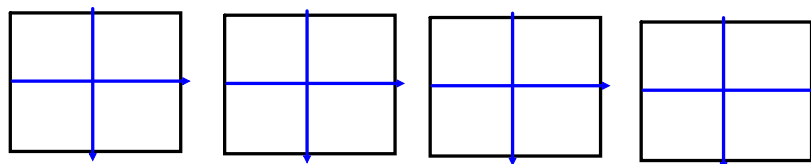


$$b) 3 \div \frac{1}{3}$$



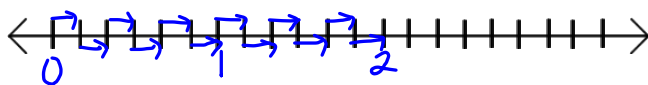
$$= 9$$

$$c) 4 \div \frac{1}{4}$$



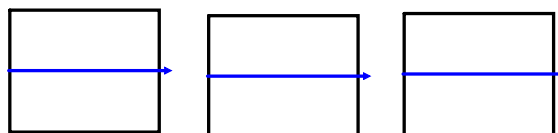
$$= 16$$

$$d) 2 \div \frac{1}{6}$$



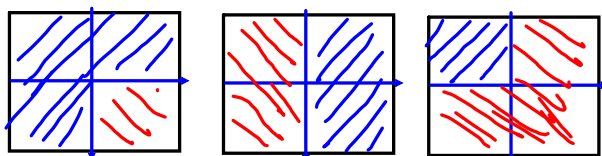
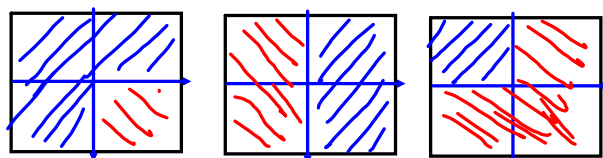
$$= 12$$

$$e) 3 \div \frac{1}{2}$$



$$= 6$$

$$f) 6 \div \frac{3}{4}$$



$$= 8$$

$$7. a) 3 \div \frac{1}{4} = 12$$

$$3 \div \frac{1}{2} = 6$$

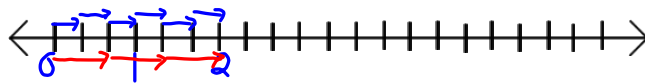
$$b) 2 \div \frac{1}{3} = 6$$

$$c) 4 \div \frac{1}{6} = 24$$

$$4 \div \frac{1}{3} = 12$$

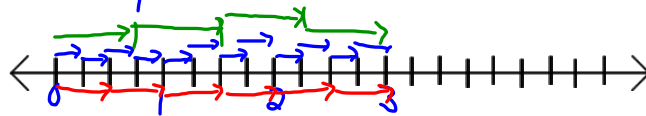
$$4 \div \frac{1}{2} = 8$$

$$8a) i) 2 \div \frac{1}{3} = 6$$



$$ii) 2 \div \frac{2}{3} = 3$$

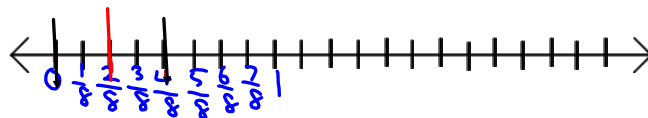
$$b) i) 3 \div \frac{1}{4} = 12$$



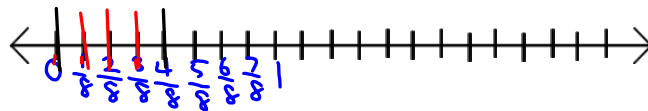
$$ii) 3 \div \frac{2}{4} = 6$$

$$iii) 3 \div \frac{3}{4} = 4$$

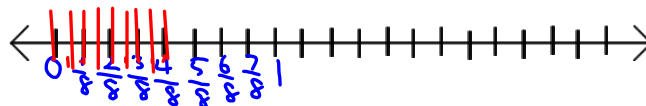
$$c) \frac{4}{8} \div 2 = \frac{2}{8}$$



$$ii) \frac{4}{8} \div 4 = \frac{1}{8}$$

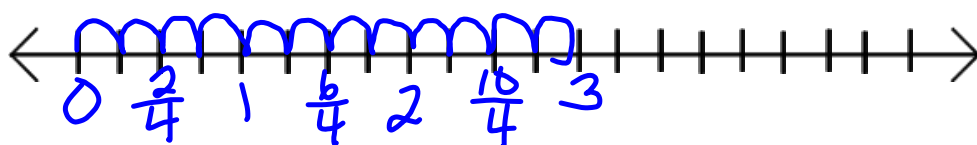


$$iii) \frac{4}{8} \div 8 = \frac{1}{16}$$

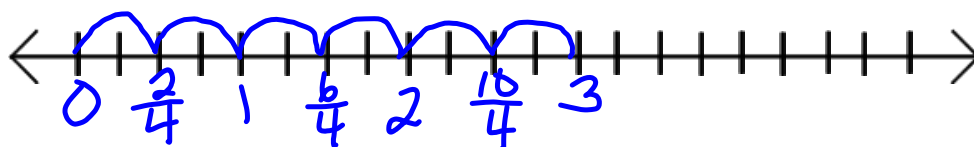


$$\frac{4}{8} \div \frac{1}{16}$$

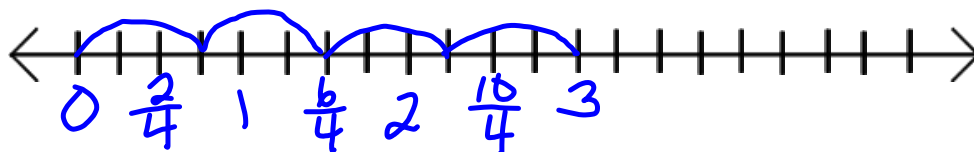
$$3 \div \frac{1}{4} = 12$$



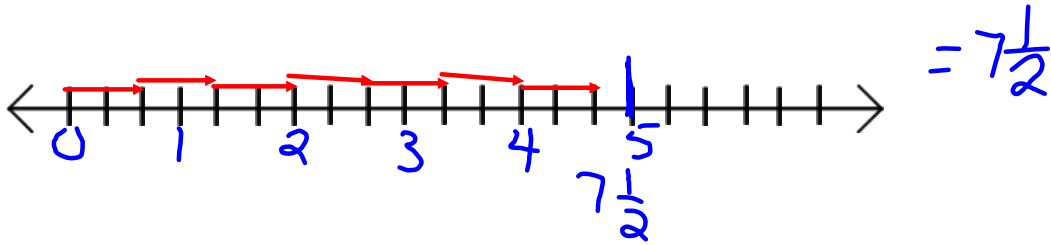
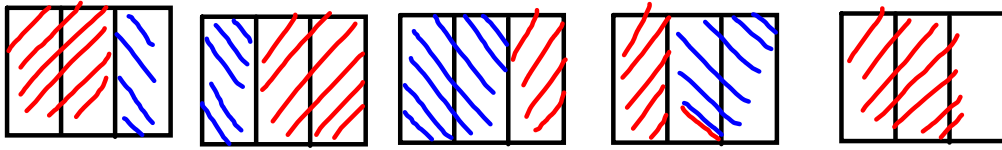
$$3 \div \frac{2}{4} = 6$$



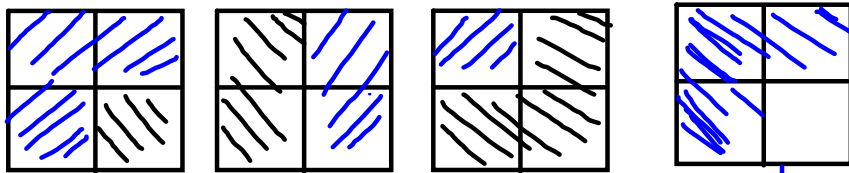
$$3 \div \frac{3}{4}$$



9 a) $5 \div \frac{2}{3} =$
 ☺



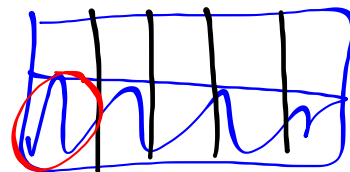
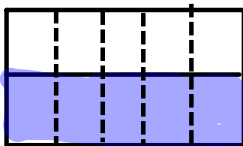
b) $4 \div \frac{3}{4}$
 ☺



$5 \frac{1}{3}$

have 1 piece
need 3.

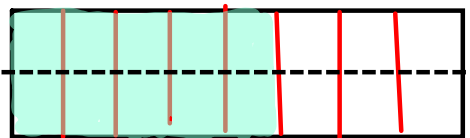
c) $\frac{1}{2} \div 5$



$= \frac{1}{10}$

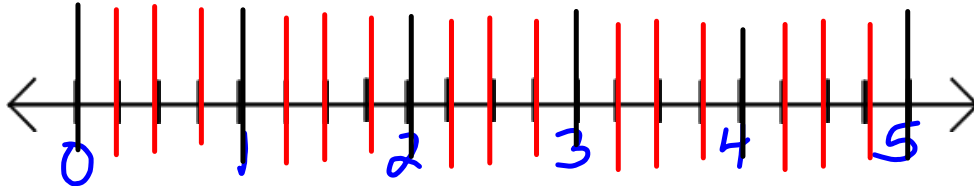
$\frac{1}{10}$

d) $\frac{5}{8} \div 2$



$= \frac{5}{16}$

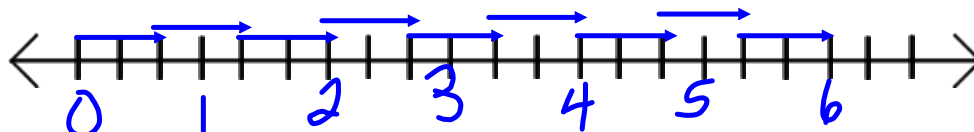
10 a)



$$5 \div \frac{1}{4} = 20$$



b) $6 \div \frac{2}{3}$



$$= 9$$



c) $12 \div \frac{4}{5}$

15 days

15 Full leaps



Dividing Fractions

Strategy 1: Common Denominators



$$\frac{4}{5} \div \frac{1}{10}$$



Step 1) Find a common denominator

$$= \frac{2 \times 4}{2 \times 5} \div \left(\frac{1}{10} \right)$$

$$= \left(\frac{8}{10} \right) \div \left(\frac{1}{10} \right)$$

*divide top by top
div bottom by bottom*

$$\frac{8 \div 1}{10 \div 10}$$

$$= \frac{8}{1} = 8$$

Now since the denominators are the same (10) will always equal 1.
(Is that needed? NO)

Once common denominator

now divide numerator with numerator
And
divide Denominator with denominator

Step 2) Divide Numerator by Numerator

You Try

$$\frac{5 \times 3}{5 \times 7} \div \frac{2 \times 7}{5 \times 7}$$

$$\frac{15}{35} \div \frac{14}{35}$$

$$= \frac{15 \div 14}{35 \div 35}$$

$$= \frac{15 \div 14}{1}$$

$$= \frac{15 \div 14}{1}$$

$$\frac{15}{14}$$

*7, 14, 21, 28, 35, 42
5, 10, 15, 20, 25, 30, 35*

Let's Try another way

$$\frac{2}{5} \div \frac{3}{4} \quad \text{is the same as} \quad \frac{6}{2} = \frac{3}{1} = 3$$

Let's make the denominator 1

But remember what you do to the denominator you MUST do to the numerator

$$\frac{\frac{2}{5}}{\frac{3}{4}} \quad \left. \begin{array}{l} \text{ } \\ \text{ } \end{array} \right\} \begin{array}{l} \text{numerator} \\ \text{denominator} \end{array}$$

$$= \frac{\frac{2}{5} \times \frac{4}{3}}{\frac{3}{4} \times \frac{4}{3}}$$

$$= \frac{\frac{8}{15}}{1}$$

$$= \frac{8}{15}$$


=

$$\frac{3}{5} \div \frac{1}{2}$$


↑ and multiply ↑ flip

$$\frac{3}{5} \times \frac{2}{1}$$

$$\frac{2}{3} \times \frac{3}{2} = \frac{6}{6} = 1$$

 <http://www.youtube.com/watch?v=80WArGwAjt8&feature=related>

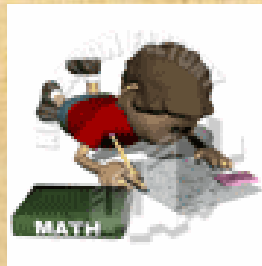
why to flip and multiply?

 <http://www.youtube.com/watch?v=05rL51flamk&feature=channel>

fraction rap

 <http://www.youtube.com/watch?v=OGUaN-F80NA&NR=1>

 <http://www.youtube.com/watch?v=7GaeC4IPaSo>



Dividing Fractions



Reciprocal

- Every **non-zero** fraction has a reciprocal.
- Fractions with a denominator of "0" are undefined. $\left(\frac{6}{0}\right)$
- To find the **reciprocal** of a fraction, you simply **flip** the fraction !!

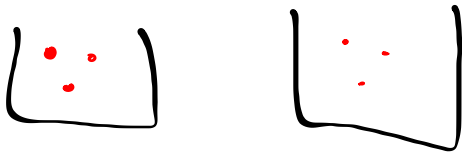
$$\frac{4}{5} \quad \curvearrowright \quad \frac{5}{4}$$



$$6 \div 2 = 3$$

↓
6 apple

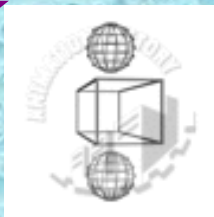
↓
2 baskets



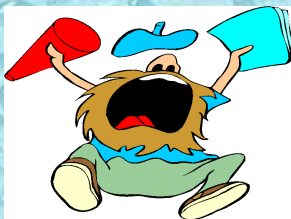
$$6 \div 0$$

↓
6 apple

↓
no basket

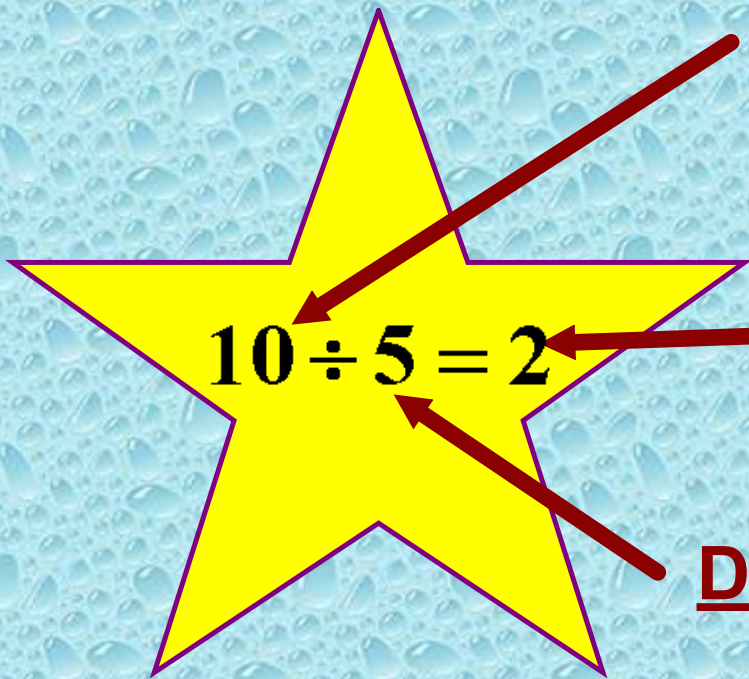


**Express each
division question as
a multiplication
question !!!!**





Terminology



Dividend

Quotient

Divisor



**Express division as
multiplication by multiplying
the dividend by the reciprocal
of the divisor !!**

$$\frac{4}{5} \div \frac{1}{3} =$$

$$\frac{4}{5} \times \frac{3}{1} =$$

So what have you discovered about dividing fractions?
Is there a way to divide fractions without modeling?

Rule for Dividing Fractions

To divide a fraction, the number before the division sign stays the same, the division sign changes to multiplication and the number after the division sign changes to its reciprocal, then multiply the fractions. Or in other words, invert and multiply.

Reciprocal is when you invert the fraction, the numerator moves to the denominator and the denominator moves up to the numerator.

examples $\frac{5}{4}, \frac{4}{5}$ $\frac{10}{7}, \frac{7}{10}$ $\frac{1}{8}, \frac{8}{1}$ $\frac{6}{11}, \frac{11}{6}$

Examples:

(a) $\frac{3}{5} \div \frac{4}{7}$
 $=$
 $= \frac{3}{5} \times \frac{7}{4}$ (flip and multiply)
 $= \frac{21}{20}$

(b) $\frac{9}{10} \div \frac{8}{15}$ Always Reduce
 $=$
 $= \frac{9}{10} \times \frac{15}{8}$

$9 \times 15 = 135$
 $\frac{135}{10 \times 8}$
 $\frac{9 \times 3}{2 \times 8} = \frac{27}{16}$

Rule for Dividing Fractions is:

Flip second fraction and Multiply

$$\frac{7}{8} \div \frac{1}{3}$$

$$\frac{7}{8} \times \frac{3}{1} = \frac{21}{8}$$

Class / Homework

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$abcd$ $abcd$ ab ab ab
#8, #9, #10, #11, #12, #14, #15(a,b), #16

Flip and Multiply
(Always Reduce)

